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SEVENTH BI-MONTHLY PROGRESS REPORT
UNIVERSITY OF ALASKA
ERTS PROJECT 110-5
September 31, 1973

(E73-11085) BREAK-UP CHARACTERISTICS OF
CHENA RIVER BASIN Bimonthly Progress
Report (Alaska Univ., Fairbanks.) 5 p
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A. TITLE OF INVESTIGATION

Break-up Characteristics of Chena River Basin

B. PRINCIPAL INVESTIGATOR / GSFC ID: U596

Robert F. Carlson
Associate Professor of Hydrology and
Director - Institute of Water Resources
University of Alaska
Fairbanks, Alaska

C. PROBLEMS IMPEDING INVESTIGATION

None

D. PROGRESS REPORT

1. Accomplishments during reporting period

With the project termination date readily approaching, an effort is being made to fit the results from ERTS imagery with our snowmelt model. In our last report, we presented the results of our imagery analysis for the spring break-up in the Chena River Basin. Since that time, some additional analysis of the snow distribution as a function both of slope and elevation have been made. However, the major effort during this reporting period has been to develop a snowmelt model in which the output from the model could be compared readily with ERTS imagery. The daily outputs from the snowmelt model are the thickness of the melting snowpack and the incremental water input to the basin. This snowmelt model is based on an energy balance which is applied to four intervals. The modeling results for the 1973 spring break-up are shown on an attached sheet. The rate of snow cover disappearance as delivered from ERTS imagery is being compared with the modeling results. Also, these results can be compared with field measurements of the decreasing depth of snow cover. Continuous stream discharge values for two stations on the Chena River have been obtained from the U. S. Geological Survey.

2. Plans for Next Reporting Period

A runoff model will be developed so that the results of the snowmelt model can be used to generate a runoff hydrograph.

This will allow comparison with measured discharges. The investigation on the rate of melting for different exposures and altitudes is continuing. Should the CDU-200 become fully operational before the termination date of this project, an attempt will be made to use this instrument. The results from ERTS imagery, snowmelt model, and field measurements will be analyzed and the results reported in our termination report.

E. SIGNIFICANT RESULTS: (See Separate Page)

F. PUBLICATIONS

None

G. RECOMMENDATIONS

None

H. REVISED STANDING ORDERS

None

I. ERTS IMAGE DESCRIPTORS FORM

None

J. DATA REQUESTS

None

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DISCIPLINE

Hydrology

SUBDISCIPLINE

Meteorology

SUMMARY OF SIGNIFICANT RESULTS

Results from snowmelt model were obtained showing the decreasing changes in snow depth for four elevational ranges in the Chena River Basin. This model is based on the energy balance of the snow-pack and the results are shown on the attached figures. Also, the measured hydrograph for two stations on the Chena River are shown. The next phase of the study will be to analyze the model using both ERTS imagery and measured field values.

INCREMENTAL SNOWMELT INPUT TO WATERSHED, inches

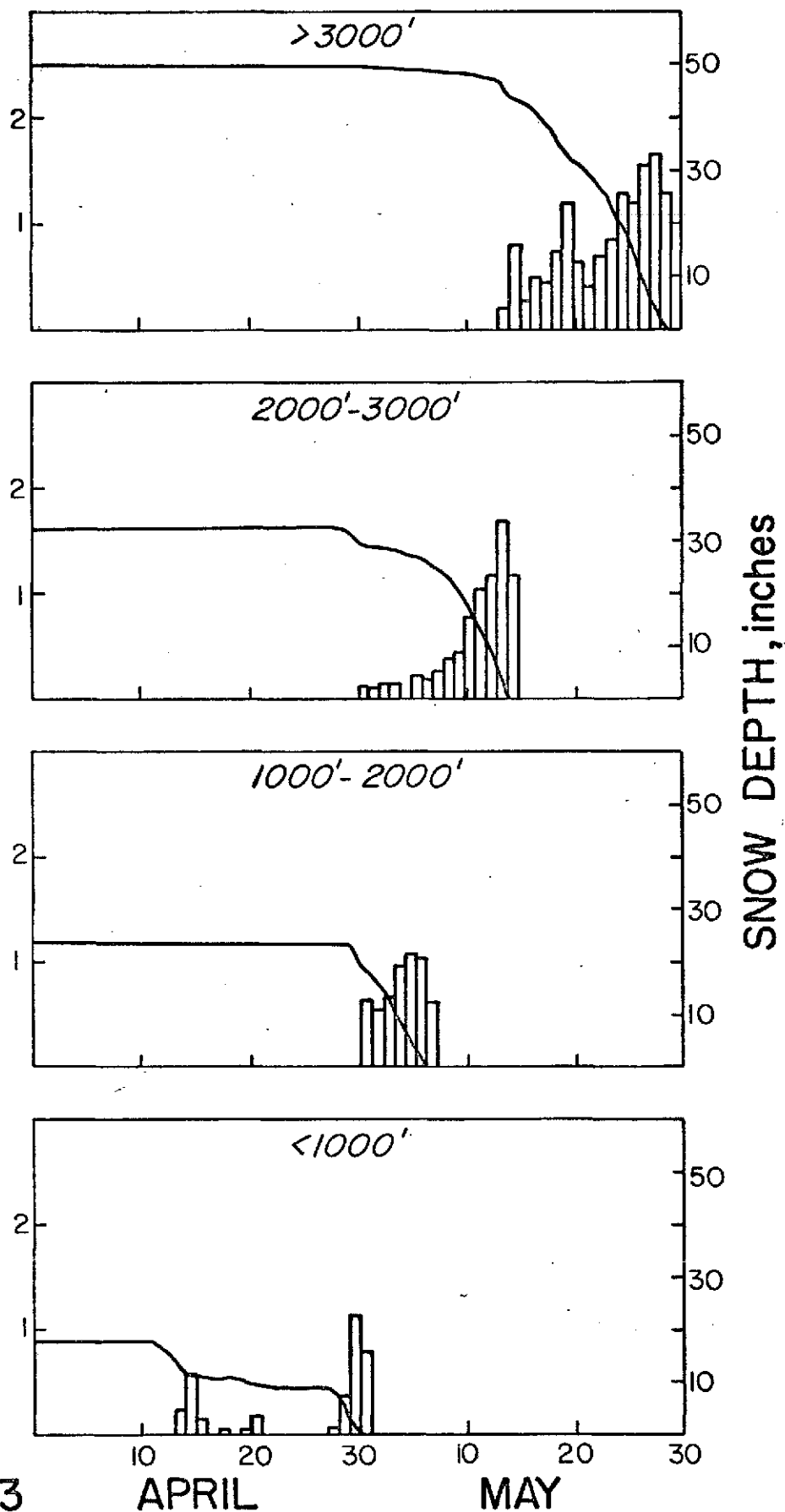


FIGURE 1. Rate of Snowmelt and Incremental Input to Watershed, Chena River Basin.

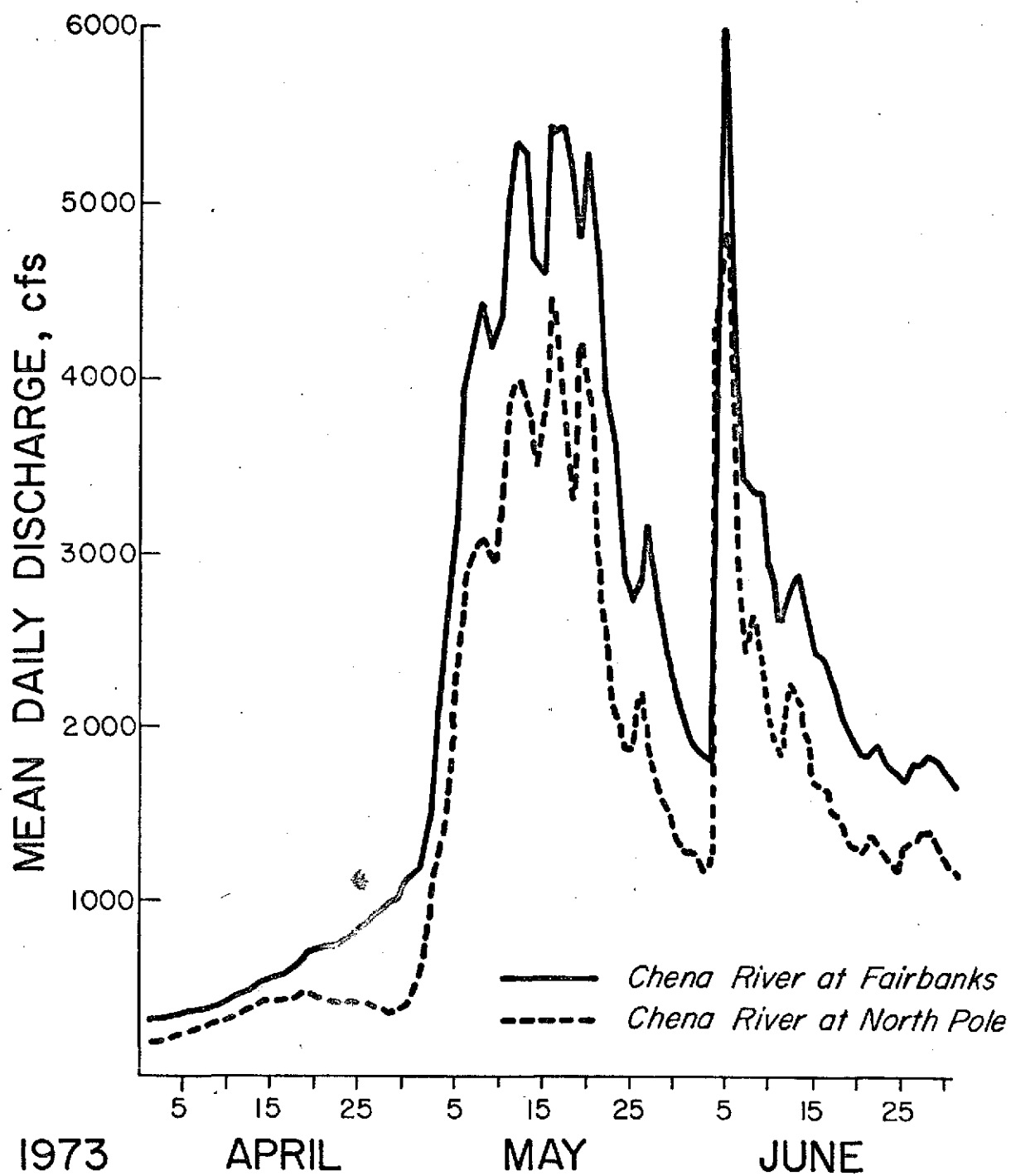


FIGURE 2. Measured Snowmelt Hydrographs for Chena River (Data Source, U. S. Geological Survey).